

01210056 SUPPLIER NUMBER: 06014646 (THIS IS THE FULL TEXT)
Security with a personal touch.
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Modern Office Technology, v32, n5, p78(2)
May, 1987
ISSN: 0746-3839 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1252 LINE COUNT: 00092

ABSTRACT: Indentix in Palo Alto, CA, perfects their biometric fingerprint recognition identification system with a site test at Bank of the West in San Jose, CA. Indentix has provided the bank with various models that give tellers access to a deposit tallying room by checking fingerprints. The machines incorporate the principle of total internal reflection to interpret the three-dimensional map of the fingerprint for comparison with stored digitized **fingerprint** templates of **designated**

personnel. Thousands of fingerprint templates can be stored via a PC-XT or higher level model. The 3-D mapping feature prevents tricking the machine with a photograph or other reproduction since the machine must read ridges and valleys to achieve verification. The system provides an audit trail of successful and unsuccessful access attempts, and offers a security surpassing that of keys or access codes. Minor problems such as dirt and oil on the fingers and long fingernails called for some machine adjustment, but hundreds of accesses per day are currently being processed with no problems. The system has saved time and increased productivity without compromising security by making it unnecessary for employees, who in the past held keys, to get up and let others into the room throughout the day.

TEXT:

SECURITY WITH A PERSONAL TOUCH

When the people at Indentix of Palo Alto, CA were perfecting their biometric fingerprint recognition identification system, they thought, "Who better to help us test it than a bank?" So they struck up a deal with Bank of the West in San Jose, CA and for over three years have provided the bank with various models that permit designated tellers access to a deposit-tallying room by quickly checking their fingerprints.

"We agreed to put their machine into an operational location," says Rich McGoldrick, Bank of the West's senior vice-president. "Periodically they come in and change the machine, making some of the improvements based on our comments." Currently, the bank is using the IDX-10, version 3.

The principle that the typewriter-sized machine incorporates to read fingerprints is known as total internal reflection. Inside the unit, a beam of light bounces up into an external curved glass lens, never bouncing out until something is touched to the lens' surface, i.e., a finger; a receptor inside the machine records the angle of the reflected rays. The IDX then builds a 3-dimensional map of the fingerprint for comparison with digitized fingerprint templates of users that have been initially entered and are now stored in a host computer. Thousands of fingerprint templates can be stored in a PC-XT or higher-level models. An LCD display tells whether or not access has been obtained. If so, an electronic lock opens the door.

The 3-D mapping process prevents the machine from being fooled by the placement of a photograph on the lens; an actual fingerprint with ridges and valleys is necessary for verification.

Another feature is the machine's ability to print out a forensic-quality fingerprint image using a special dot-matrix printer. This also can be done for access attempts performed even by people not logged into the computer's memory system.

Bank of the West stations its IDX behind the teller area in a hall leading to the room used for processing merchant deposits. The bank tellers and armored car drivers comprise the two dozen people enrolled in the system. Says McGoldrick, "The machine probably gets a couple hundred accesses a day. People are going in and out all day long." Fingerprint verification takes a mere three seconds.

McGoldrick appreciates the IDX's ability to record an audit trail of all access attempts, both successful and unsuccessful. At each day's end, a printout is made of who used the machine and at what time. "An audit trail was one of the things I was most interested in," he says, "because with a key or a password all you know is that someone used it. The audit trail says that this is in fact the person who did it."

Better than keys

Until the acquisition of Identix equipment, Bank of the West had used keys to unlock the deposit room's door. But a key system is only as reliable as those who are issued keys. The same holds true for codes. "Our experience with keys or code is that people give them to other people," says McGoldrick. "The security of keys is compromised as it is with codes, whereas the security of a fingerprint is unique."

Although biometric forms of identification might worry some that the employer may be taking cues from Big Brother, McGoldrick reports that employees at the bank easily adapted to it. "Our people responded very favorably because we took some effort to make sure that they realized there were no fingerprint records being kept."

"We feel we have an advantage because we're in the heart of Silicon Valley. And it's a very hightech area so the people are more interested in high technology. In another part of the country, you might find some customer resistance."

Just as the employees adjusted to working with the machine, the machine required a few adjustments itself. Tellers who count money all day get their hands coated with layers of oils and grime. Sometimes this dirt would rub off and accumulate on the machine's glass scanning lens, making verification difficult. Another concern that was brought to attention by the bank's female tellers resulted in upgrading the machine. "Some of the ladies have long fingernails," says McGoldrick. "Well, the vendor had not engineered it for someone with long fingernails, so they had to make some modifications to accommodate these women."

Presently, the hundreds of accesses a day are posing no problems for the IDX-10, and McGoldrick is so impressed with the system, he envisions tying it into other bank functions. "There are other uses of the machine that we are in the process of building toward. One of them is for our service teams who have evening and weekend duties to service ATMs (automatic teller machines). As it stands now, each team that rotates has to have a set of keys to the branches that they service, and one team passes on those keys to the next team."

Corporate fund transfers could also be made more secure with this type of verification equipment. "I see a use being where large companies transfer monies from their banking accounts," says McGoldrick. "A controller of a large company could have a little modem or a terminal with an Identix-type unit on it which he could use to directly access the fund and make transfers through his own terminal. This way you know whether the person is in fact authorized to make the transfer, and you have a record of the fact that he did. This would allow for a greater degree of confidence in the security system."

For customer use, McGoldrick believes biometric verification devices may soon be on the front of ATMs, replacing the popular card and code system. He has even come up with a plan to promote such a method and attract new customers. "We could advertise a premium-type service. For instance, the customer has his choice of using the card or using the Identix machine. Right now with ATM cards you can get only a limited amount of money out of your account. If he uses the Identix machine, you give him unlimited access to the money. This is what we're thinking about. It makes sense to us."

Less hassle

But for now the people benefiting from the IDX-10 are the bank employees. The tellers and McGoldrick have noticed that the machine actually boosts productivity. "Because we didn't want to issue everyone keys, in the past we only had about three people with keys to the door," he

explains. "So for those three people it's been a dramatic increase in productivity because they don't have to get up and unlock the door every time someone needs to get in.

"Mostly the machine has saved us time. And it's saved me worry because we have a lot of money that runs in and out of that operation every day. We increased our employees' productivity, and we increased our own confidence in that we weren't compromising the security to do it.'

Photo: Biometric technology for high-tech security.

Photo: Photo, courtesy of Identix, Inc.

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SPECIAL FEATURES: illustration; photograph

COMPANY NAMES: Bank of the West--Testing

DESCRIPTORS: Beta Testing; Testing; Microcomputer; New Technique; Banking

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